Pressure gauge for high temperature operation
with electrical contact device, Type Series BX1008

Features

- Safety case DN 100 with rear blow-out device per EN 837-1 S1
- Case and pressure element assembly of stainless steel
- Degree of protection IP 65
- Nominal ranges 0...6 bis 0...400 bar
- Process temperature max. 350 °C
- Flush mounted diaphragm
- Inductive contact device per DIN 16085

Applications

The pressure gauge with contact device is designed for local pressure measurement and contact operation with pressure ranges from 0...6 to 0...400 bar (DIN ranges). The integrated diaphragm seal allows process temperatures up to 350 °C.

Techn. Data

Case
high quality case with bayonet ring DN 100.
With rear blow-out device per EN 837-1
material: st.steel mat.-no. 1.4301

Degree of protection (EN 60529)
IP 65 standard case
safety case without filling

Measuring system
helical bourdon tube system

Scale
pure aluminium, white with black inscription.

Pointer
pure aluminium, black, with micro adjustment for zero-point correction

Window
Macrolon

Case seal
sealing ring: Perbunan
filling plug: Desmopan

Nominal range
per EN 837-1
0...6 to 0...400 bar, see order code

Overload protection
up to end value

Accuracy
(per DIN 16085 without changes to contact device adjustment)
class 2.5;
class 4.0: measuring ranges ≤ 40 bar

Temperature influence
ambient temperature
on measuring span: ≤ 0.3 %/10 K
on zero point: ≤ 0.3 %/10 K
process temperatures at diaphragm seal
on zero point: ≤ 0.2 %/10 K

Electrical connection
connection plug with cable gland M 20 x 1.5 and removable test cover, mat. Macrolon

Ex-approval
contact device suitable for intrinsically safe circuits
Ex II 2 G EEx ia/ib IIC T4, T5, T6
PTB 99 ATEX 2219X

Materials
lagging tube: st.st.no. 1.4301
connection flange: st.st.no. 1.4301
membrane: st.st.no. 1.4571
meas. body: st.st.no. 1.4571

System filling
high temperature liquid

Process temperature
+20...+350°C

Case temperature
+20...+70 °C operating range
- 25...+80 °C storage range

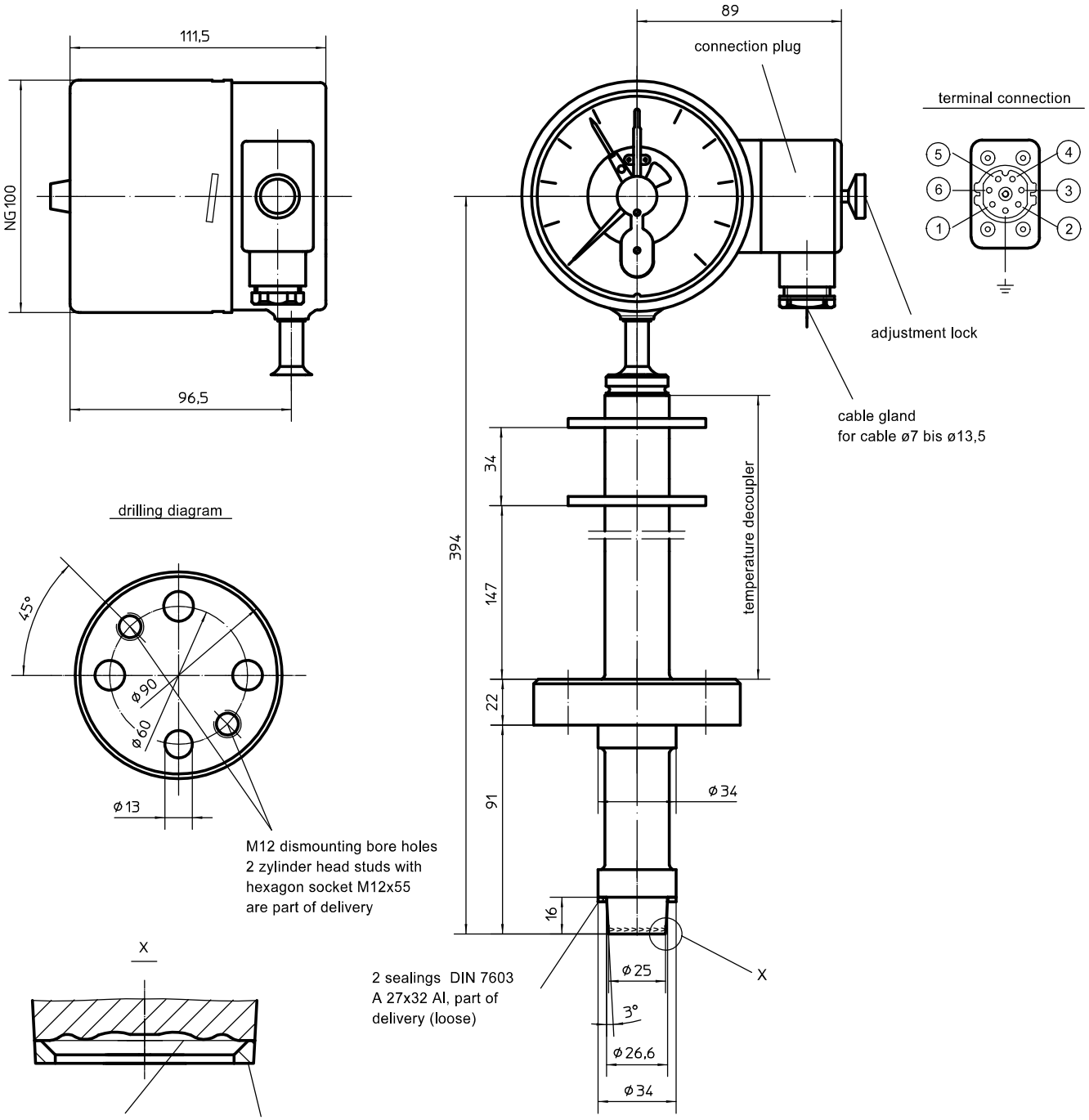
Alternating load
for static process with slow acting transient pressure

Mounting position
vertical

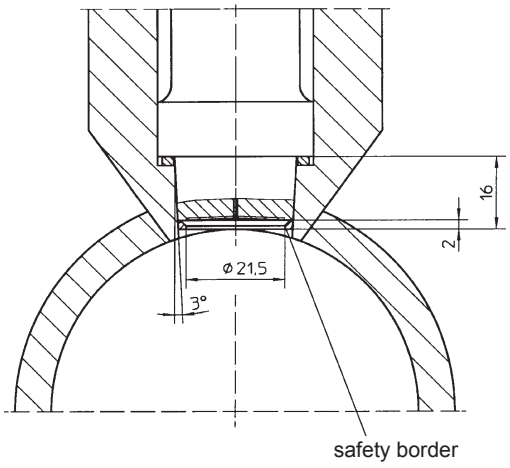
Accessories
2 sealings DIN 7603, A 27 x 32 Al, 2 socket head cap screws M 12 x 55 DIN 912, quality A2-70

Weight
approx. 2.7 kg

Dimensions



Drawing



Inductive contact devices

Connection characteristic data for initiators per DIN EN 60947-5-6 (NAMUR):

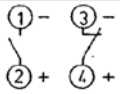
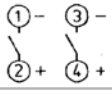
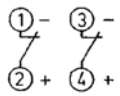
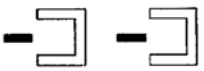
nominal voltage:	8 V= (Ri ≈ 1KΩ)
operating voltage:	5 - 25 V
current consumption:	> 3 mA (active face uncovered)
switching accuracy:	approx. 0.5% of full scale value
contact setting range:	can be adjusted across the entire scale range (adjustment made with contact lock)
ambient temperature:	-25 up to +100°C

PTB 99 ATEX 2219 X			Ex-valves for initiator					type of connected circuit as per type examination certificate
connection to intrinsically safe circuits EEx ia IIC/IIB or EEx ib IIC/IIB with:			SJ2 - N (DN 100)					
			C_i	L_i	Tu at T4	Tu at T5	Tu at T6	
U_i = 16 V	I_i = 25 mA	P_i = 34 mW	30nF	100µH	100 °C	88 °C	73 °C	1
U_i = 16 V	I_i = 25 mA	P_i = 64 mW	30nF	100µH	100 °C	82 °C	67 °C	2
U_i = 16 V	I_i = 52 mA	P_i = 169 mW	30nF	100µH	78 °C	60 °C	45 °C	3
U_i = 16 V	I_i = 76 mA	P_i = 242 mW	30nF	100µH	57 °C	45 °C	30 °C	4

Switching function

With respect to their switching characteristics, it is possible to consider inductive contacts as "open" contacts. The immersion of the control-vane into the slit-initiator or control head results in an interruption of the control current. The surfacing of the control-vane, on the other hand, results in a switching-on of the control current.

We distinguish minimum- and maximum-contacts in such a way, that minimum-contacts are considered from a higher, maximum-contacts from a lower standpoint. The starting point or observer's standpoint is the normal operational indication, generally a value of around 50 % of the measuring range. Contacts to the left of this reference point are Min.-contacts, correspondingly those to the right thereof are Max.-contacts.

order code	switching function	description of the switching function	presentation of the switched-off condition *	
			position control vane	switching-symbol term.-desig.
N4500	min- break contact	the control-current interrupts when falling below the limiting value		
N4200	max- break contact	the control-current interrupts when limiting value is exceeded		
N4520	min-max- break contact	1. contact interrupts the control-current when falling below, 2. contact interrupts the control-current when limiting value is exceeded		
N4550	dual min- break contact	1. and 2. contact interrupt the control-current when falling below the limiting values		
N4220	dual max- break contact	1. and 2. contact interrupt the control-current when limiting values are exceeded		

*seen clockwise, pointer positioned at the beginning of the dial.

According to EN 837-2 the class accuracy of a measuring instrument is valid only then if additional devices, as for instance contacts, are not in contact position. Especially within small measuring ranges there may occur additional errors through contact actuation. On request special graduations may be carried out, having regard to the influence exerted by contacts. In these cases the working ranges are to be defined.

Mounting and installation instructions

Our pressure gauges comply with the Technical Terms of Delivery according to EN 837-3, Part 2. We recommend to check, before use, suitability resp. resistance to temperature, chemical products, vibration, etc. As far as selection, measurement arrangement, operation and installation of pressure gauges are concerned, attention should be paid to EN 837-2. Below, please find some remarks on the use of our pressure gauges:

Gauge Design

The pressure gauge is equipped with a diaphragm seal. Diaphragm seals are devices that are designed to prevent the medium being measured from penetrating into the pressure gauge system. Use of the right type of diaphragm seal system permits solutions in the case of measuring problems that could often not be coped with by using solely a pressure gauge.

- Protection of the pressure gauges against aggressive, highly viscous, coagulating or crystallizing media.
- Protection against high or fluctuating temperature in the medium being measured. Temperature limits in accordance with the Data Sheet.
- Clearance-volume free measuring point arrangement.
- Employment of special material or surface coating for the parts in contact with the medium being measured, for special applications.

When diaphragm seals are used, pressure gauges are actuated by means of an appropriate diaphragm seal liquid. Thus, contact with the medium being measured is avoided. Pressure gauge and diaphragm seal always represent a closed system and must not be separated by unauthorized persons.

Remarks on Installation

Compensation of the housing pressure is effected via a bore accomodated near the connecting-piece seal on the bottom side of the housing. This bore must not be clogged by paint or other matter.

The pressure gauge system is to be installed vertically. The pressure gauge system is fixed by means of 4 flange bolts that have to be tightened alternately and stepwise (crosswise). Maximum tightening torque: 60 Nm (slightly oiled).

During installation of the gauges, attention has to be paid to the diaphragms not being damaged by the medium being measured. This is particularly important in the case of coagulating media that can have deforming influence on the diaphragms when they get cold and, thus, sticky. The pressure gauge system may be pulled out only while the medium is liquid (warm). Renewed installation always requires the use of new gaskets. Gasket arrangement is shown on the Data Sheet. The maximum admissible housing temperature of +70 °C has to be ensured by adequate insulation.

At the manufacturer's works, the pressure gauge is calibrated at a temperature of approx. +20 °C. The accuracy indicated on the Data Sheet is related to this temperature. In the case of higher housing and process temperatures an additional measuring error is likely to occur.
We recommend that a zero offset compensation be carried out at operating temperature, while the system is unpressurized. For this purpose, the micropointer of the set-screw on the pointer hub is adjusted by turning. The set-screw is accessible following removal of the bayonet ring housing.

Additional Electric Equipment
Equipment with "intrinsically safe" circuits may be installed by competent personnel, only. The relevant VDE Regulations resp. operating regulations have to be adhered to. For terminal utilisation - see Page 4.
Mounting Instructions
- Screw down 4 flange screws in alternating order (crosswise) step by step: max. torque 60 Nm (slightly oiled).
- The max. permissible housing temperature has to be ensured by means of appropriate insulation.

Caution:
Before testing/commissioning the high-temp.-pressure transmitter, ensure that the characteristic temperature is at least the lower temperature limit value > 20 °C. We recommend a temperature of 23 °C at the gauge for testing purpose. Please consider temperature adaption period in case of storage below 20 °C. As an example, at least a 2 hour temperature adaption period at 25 °C ambient temperature is required for each degree deviation from 20 °C (for example during storage). Higher ambient temperatures (max. 70 °C) of 25 °C significantly reduce the adaption period.

Order code - please give additional specifications for models not listed -

Pressure gauge with electrical contact device for high temperature operation		**BX1008**		
nominal range	0...6 bar		**A57**	
	0...10 bar		**A58**	
	0...16 bar		**A59**	
	0...25 bar		**A60**	
	0...40 bar		**A61**	
	0...60 bar		**A62**	
	0...100 bar		**A63**	
	0...160 bar		**A64**	
	0...250 bar		**A65**	
	0...400 bar		**A66**	
	0...600 KPa		**A214**	
	0...1000 KPa		**A215**	
	0...1600 KPa		**A216**	
	0...2500 KPa		**A217**	
	0...1 MPa		**A266**	
	0...1.6 MPa		**A267**	
	0...2.5 MPa		**A268**	
	0...4 MPa		**A269**	
	0...6 MPa		**A270**	
	0...10 MPa		**A271**	
	0...16 MPa		**A272**	
	0...25 MPa		**A273**	
	0...40 MPa		**A274**	
contact function	· single min. break contact			**N4500**
	· single max. break contact			**N4200**
	· dual max. break contact			**N4220**
	· min.-max. break contact			**N4520**
	· dual min. break contact			**N4550**
Order code (example):		**BX1008**	**A59**	**N4200**

additional features (to be indicated in case of need, only):

accessories	· 2 socket head cap srewes M 12 x 55	**MX1005 - A1 - B1**
	DIN 912, quality A2-70	
	2 sealings DIN 7603, A 27 x 32 Al	